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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/932,228 09/17/97 SCHUEGRAF

K MICRON.009DV

EXAMINER

MM92/1219

KNOBBE MARTENS OLSON AND BEAR
620 NEWPORT CENTER DRIVE
SIXTEENTH FLOOR
NEWPORT BEACH CA 92660-8016

VU.H

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 12/19/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/932,228

Applicant(s)
SCHUEGRAF ET AL.

Examiner
HUNG VU

Group Art Unit
2811



☒ Responsive to communication(s) filed on Sep 29, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 11-16 and 21-24 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 11-16 and 21-24 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Continued Prosecution Application

1. The request filed on 09/29/00 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 08/932,228 is acceptable and a CPA has been established. An action on the CPA follows.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 22, a phrase "wherein the halide-doped silicon oxide has a dielectric constant of greater less than 3.9" is unclear as to whether it is being referred to "wherein the halide-doped silicon oxide has a dielectric constant of less than 3.9".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 21, 22, and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Anjum et al. (PN 5,372,951, of record).

Anjum et al. discloses an integrated circuit having a plurality of isolation regions within a semiconductor substrate, each isolation region defined by;

a trench within the substrate;

a halide-doped silicon oxide (36,38) filling the trench to form an isolation element;

wherein the halide-doped silicon oxide has a dielectric constant of less than 3.9;

wherein the halide-doped silicon oxide comprises fluoride-doped silicon dioxide. Note

Figure 5 of Anjum et al..

It is noted that in the claim 21, the terms “the trench having a characteristic profile produced by an etch process” and “the substrate retaining the characteristic profile of the trench” are method recitations in a device claimed, and they are non-limiting, because only the final product is relevant, not the method of making. A product by process claim is directed to the product per se, no matter how actually made. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in “product by process” claims or not.

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bose (PN 5,492,858, of record) in view of Anjum et al. (PN 5,372,951, of record).

Bose et al. discloses an isolation structure in a semiconductor substrate comprising,

a recessed portion (20,21,22) formed with a vertical sidewall within the semiconductor substrate (10);

a dielectric material (14) filling the recessed portion;

wherein the recessed portion comprises a trench structure having a ratio of height to width of less than 2:1;

a barrier layer (13,18) disposed between the recessed portion of the semiconductor substrate and the dielectric material. Note Figures 1-5 of Bose et al..

Bose et al. discloses the dielectric material comprising silicon oxide. Bose et al. does not disclose the silicon oxide comprising a halide-doped. However, Anjum et al. discloses an isolation structure (36,38) having silicon oxide comprised halide-doped. Note Figure 5 of Anjum et al..

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the recessed portion of Bose et al.'s having the silicon oxide comprising halide-

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doped, such as taught by Anjum et al. in order to dislodge oxygen at silicon-oxygen bond sites and to enhance thickening effect of oxide regions.

With regard to claim 13, Bose et al. and Anjum et al. disclose all of the claimed limitations except the trench having a depth of less than 200 nm. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the trench of Bose et al.'s and Anjum et al.'s having a depth of less than 200 nm because such structure is well-known in the art in order to decrease the void formation and to increase the surface planarity of the final trench structure. Note Swan et al. (PN 5,356,838) of record is cited to support the well-known position.

Response to Arguments

5. Applicant's arguments filed 09/29/00 have been fully considered but they are not persuasive.

It is argued, at pages 2 and 3 of the Remarks, that Anjum et al. does not disclose the trench having a characteristic profile produced by an etch process. This argument is not convincing because the term "the trench having a characteristic profile produced by an etch process" is method recitation in a device claimed, and it is non-limiting, because only the final product is relevant, not the method of making. A product by process claim is directed to the product per se, no matter how actually made. See also MPEP 2113. Moreover, an old or obvious product produced by a new method is not a patentable product, whether claimed in "product by process"

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claims or not. Therefore, Applicants' claim 21 does not distinguish over the Anjum et al. reference.

Conclusion

6. Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to ***Hung Vu*** whose telephone number is (703) 308-4079. The Examiner is in the Office generally between the hours of 7:30 AM to 4:00 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is (703) 308-0956.

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Vu

December 14, 2000

Steven Loke
Primary Examiner

A handwritten signature in cursive script that reads "Steven Loke". The signature is written in black ink and is positioned below the printed name and title.